

ABSTRACT OF THE DISCLOSURE

The chemical conversion film containing, at least as the constituent components thereof, (a) at least one of the metals selected from molybdenum, zirconium, vanadium, and tungsten; (b) a rare earth metal constituting the magnet; and (c) oxygen, which is formed on the surface of a rare earth metal-based permanent magnet according to the present invention, contains a composite metal oxide provided on the surface of the R-rich phase having a lower oxidation-reduction potential through a preferential reaction of the metallic ions that are present in the form of complex ions or oxide ions, such as of molybdenum, contained in the treatment solution, with the rare earth metals that elute from the magnet. Thus formed composite metal oxide reduces the difference in corrosion potential as to realize a uniform surface potential, and effectively suppresses the corrosion based on potential difference. Furthermore, the chemical conversion film thus formed exhibits excellent corrosion resistance even if it is provided as a thin film. The production method thereof can be implemented at low cost and by a simple process comprising treating the surface of the magnet by using a treatment solution containing a molybdate and the like.